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09/859,701	05/16/2001	Benjamin P. Warner	60184.24	4132

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EXAMINER	
FOSTER, CHRISTINE E	
ART UNIT	PAPER NUMBER
1641	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/859,701	WARNER ET AL.	
	Examiner	Art Unit	
	Christine Foster	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 11-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 11-18* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendment Entry

1. Applicant's amendment, filed 10/28/2009, is acknowledged and has been entered. Claims 1 and 11 were amended. Claims 9-10 and 19-20 were canceled. Accordingly, claims 1-8 and 11-18 are currently pending and subject to examination below.

Manner of Making Amendments under 37 CFR 1.121

2. In the interest of expediting prosecution, Applicant's submission has been accepted. However, Applicant is reminded of the proper format for amendments to the claims. All claims being currently amended must be presented with markings to indicate the changes that have been made relative to the immediate prior version. See MPEP 714.

3. Specifically, it is noted that the word "a" has apparently been deleted before the words "chemically associated" in line 4 of claim 1, but there are no markings to indicate this change.

Priority

4. The present application was filed on 5/16/2001. No priority claims have been made.

Claim Objections

5. Claim 1 is objected to because of the following informalities:

6. In claim 1, lines 2-3, the phrase "at least one binder having chemically associated and nonradioactive element" is missing an article and should apparently read --at least one binder having a chemically associated and nonradioactive element--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-8 and 11-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

9. Claims 1 and 11, as instantly amended, recite exposing a plurality of "**binder-free**" receptors to at least one binder in step (a). The Examiner was unable to find support for the noted subject matter in the specification or claims as originally filed.

In particular, the specification does not employ the terminology "binder-free". As to the possibility of implicit support, it is noted that the claim terminology "binder-free" is given its broadest reasonable interpretation, receptors that are "binder-free" would encompass not only those receptors that have not yet been bound to the recited binder, but also receptors that are not bound to or in contact with any other type of biomolecule or material. No support for this type of exclusion could be found in the specification.

For example, in all of the examples disclosed in the instant specification, the receptors provided were *bound to beads* (see, e.g., page 8, line 15). Because all of the disclosed examples

involved receptors that would reasonably be considered to be *bound* to a binder (beads) in this manner, rather than being "binder-free", the specification fails to convey evidence of possession of methods in which a plurality of *binder-free* receptors are exposed to binder. Consequently, implicit or inherent support is not apparent because the claim terminology can be interpreted in a manner that would rule out all of the disclosed embodiments.

In addition, claims 1 and 11 specify in part (a) that the binder is one of the recited chemicals (e.g., an ester, a polypeptide, an antibody, etc.). The term "binder-free" could therefore also be taken to mean that the receptor is "free" of any of the indicated chemicals; i.e., that the receptor does not contain or include any of the chemicals. In other words, "binder-free receptors" could be construed as meaning that the receptors does not contain an ester, a polypeptide, an antibody, etc. No support could be found in the specification for receptors that are "free" of any these indicated chemicals. Rather, as recited in claim 5 the specification contemplates that the receptor may itself be an ester, a polypeptide, an antibody, etc. Since the receptors may themselves contain "binders", they would not be considered "binder-free".

Furthermore, many receptors are known to normally exist in association with "binders". For example, Lerner et al. (U.S. 5,665,865) teaches that metalloproteins are proteins having a metal ion complexed with the protein molecule at the protein's metal binding site, which contributes to the protein's function by stabilizing its structure, facilitating electron transfer, and the like (column 1, lines 23-29). If the claim terminology "binder-free" is taken to mean that the receptor does not include any of the materials disclosed in the instant specification as "binders", this would mean that the receptor could not include a metal ion (metal ions are disclosed in the instant specification as an example of "binders" on page 12). The claims would therefore exclude

the use of metalloproteins bearing endogenous metal ions as part of their normal structure. No basis for this type of exclusion is apparent in the instant specification.

As above, implicit or inherent support is therefore not apparent because the claim terminology can be interpreted in a manner that would rule out disclosed embodiments, yet there is no direction to exclude such embodiments in the instant specification.

For all of these reasons, the specification fails to convey evidence of possession of the claimed subject matter.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-8 and 11-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Goldin et al. ("Quantitation of Antibody Binding to Cell Surface Antigens by X-ray Fluorescence Spectrometry" *Biochimica et Biophysica Acta,* 552 (1979) 120-128; of record).

Goldin et al. teach a method of detecting binding, comprising the steps of exposing a plurality of receptors (2,4-dinitrophenol hapten receptors attached to the surface of CHO cells) to at least one binder (ferritin-labeled antibody) in order to form a binder-receptor complex. See the entire document, in particular the abstract; pages 121-122; and especially at the paragraph

bridging pages 122-123. It is noted that one could consider either the 2,4-dinitrophenol moiety alone to be the receptors or alternatively, the CHO cells together with the attached moiety as receptors.

The specification does not disclose the terminology “binder-free” or provide a specific or limiting definition thereof. When this terminology is given its broadest reasonable interpretation, this can be interpreted as referring to the fact that the receptors are not initially bound to the binder, which describes the situation in Goldin et al. prior to exposure of the hapten-bearing CHO cells to ferritin-labeled antibody.

The ferritin-labeled antibody binder of Goldin et al. may be said to include a "chemically associated" and nonradioactive element in that ferritin contains iron, which is detectable by X-ray fluorescence (see page 121, last paragraph; pages 123-125; Figure 3, and especially at page 123, the first full paragraph).

Goldin et al. further teach washing the cell-antibody complexes and arraying the complexes onto a substrate (electron microscope grids). See page 122, last paragraph.

Binding of the antibody to the cells is then detected by measuring the X-ray fluorescence due to the heavy element (iron) in the labeled-antibody/ CHO cell complexes (see page 121, last paragraph; pages 123-125; Figure 3, and especially at page 123, the first full paragraph).

With respect to claims 2 and 12, 2,4-dinitrophenol as taught by Goldin et al. is an organic (carbon-containing) compound.

With respect to claims 3-4 and 13-14, considering the CHO cells with attached hapten to represent the receptors, it is noted that such cells comprise DNA (for example), which is a polymer/oligomer of nucleic acids (see Goldin et al. at page 122, penultimate paragraph).

With respect to claim 5 and 15, 2,4-dinitrophenol may be considered a cell membrane receptor as it was attached to the plasma membrane of the CHO cells (page 122, penultimate paragraph). It is also asserted by the Examiner that this compound was known in the art to produce effects on living cells, such that it may also be considered a "drug".

With respect to claims 6-8, and16-18, Goldin et al. teaches ferritin-labeled *antibodies*, which are polymers/oligomers of amino acids that in turn comprise carbon.

12. Claims 1-5 and 11-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Sano et al. (US 6,391,590 B1) as evidenced by Sigma-Aldrich (Product information sheet, Material Safety Data Sheet, and Safety Statements for cadmium chloride (catalog No. 28811), retrieved from http://www.sigmaaldrich.com/ on 4/23/09) and Lerner et al. (U.S. 5,665,865).

Sano et al. teach methods of determining metal-binding activity of streptavidin-metallothionein chimeric protein, in which the receptors (i.e., chimeric proteins) are exposed to at least one potential binder, namely the metal ion Cd^{2+} which is provided as $CdCl_2$ during the course of protein purification (Example 2, see especially column 15, lines 11-16 and 30-42; and also at column 2, lines 40-54). The metal ion binder is made of the element cadmium (which is detectable by X-ray fluorescence) and would therefore be considered to be "chemically associated" with this element when this terminology is given its broadest reasonable interpretation.

Sigma-Aldrich et al. is cited as an evidentiary reference to show that the metal ion binder Cd^{2+} as taught by Sano et al. is associated with an element that is nonradioactive. In particular, Sigma-Aldrich et al. provides evidence regarding the known properties of $CdCl_2$. See the first

page, Product Information for Cadmium chloride, catalog No. 28811. This product information includes safety information. In the section entitled "Safety Statements," Sigma-Aldrich et al. list numerous possible safety warnings that the company uses to warn users about potential hazards of particular materials. To warn uses about materials that are radioactive, a particular pictogram is employed (see the section entitled "Pictograms and Hazard Codes"). This pictogram signaling radioactive materials is not included in the product information for cadmium chloride, indicating that this material is not radioactive. Furthermore, in the lengthy Material Safety Data Sheet for cadmium chloride which lists known hazards of this material, radioactivity is not mentioned.

Lerner et al. is cited as an evidentiary reference to show that the metal ion binder Cd^{2+} as taught by Sano et al. is a cofactor (Lerner et al. at column 16, lines 37-49).

Therefore, in light of the evidence of Sigma-Aldrich et al. and Lerner et al., the binder taught by Sano et al. is a member of the recited Markush groups of claims 1 and 11 and also has a chemically associated element which is non-radioactive.

Sano et al. further teaches spotting (i.e. arraying) the proteins onto a substrate (polypropylene membrane). See Example 3, in particular at column 15, lines 58-61). The arrayed proteins were then subjected to quantitative X-ray fluorescence in order to determine the amount of metals in the sample spot (Example 3). This reads on the instantly claimed step of detecting an X-ray fluorescence signal generated by the detectable element, since the signal of the deposited protein-bound heavy metal ion (cadmium) is measured thereby. See also column 2, lines 55-67. Regarding the limitation that the receptor is initially "binder-free", the chimeric protein of Sano et al. would be considered to be initially unbound before it is contacted with the metal ion during dialysis. When the sample is then spotted onto a membrane after the dialysis step, protein bound

to Cd^{2+} would be arrayed. See column 15. By this process, unbound metal ion would be separated form bound and unbound receptor.

With respect to claims 2-5 and 12-15, the chimeric protein taught by Sano et al. reads on the instant claims as proteins are carbon-containing polymers of amino acids.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-8 and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 4,663,277).

Wang teach methods for detecting viruses and/or proteins, in which a plurality of viruses or proteins (i.e., receptors) in a specimen is exposed to an extended solid phase component (i.e., substrate) which is coated in at least one location with antiviral or antiprotein antibody (see

especially the abstract; column 2, lines 16-67; column 3, lines 25-57; and claims 1, 20, and 39-40 in particular). This step in which viruses in the sample are bound to the solid phase via the antiviral or antiprotein antibodies reads on the claimed step of "arraying" the receptors on a substrate when given its broadest reasonable interpretation. For example, Wang teaches a solid phase that is a dipstick having two locations at which the antibody is coated (see Figure 3 and column 3, lines 65-68), such that the viruses would be bound to the dipstick in an array or pattern corresponding to the locations at which the antibody is coated. Different viruses can also be detected simultaneously by using different antiviral antibodies (column 7, lines 39-51), which would also be considered to represent an array absent a specific or limiting definition for this term.

The virus or protein receptors attached to the extended solid phase would be considered to be "binder-free" in that they are not yet bound to the binder, for example (see below). In particular, because the instantly disclosed embodiments involve the use of receptors which are bound to beads, the terminology "binder-free" can be reasonably interpreted in this manner and is not seen to limit the claims to those receptors which are not bound or attached to any other material.

Wang further teaches exposing the arrayed receptors to at least one potential binder, namely the same antibody coated onto a mobile solid phase of dispersed microspheres (see in particular column 2, lines 53-59; column 4, line 61 to column 5, line 2). Further, Wang repeatedly contrasts their disclosed methods with radioimmunoassay, such that it can be at once envisaged that the antibody-microspheres are nonradioactive.

In one embodiment, the microspheres in the binder may be doped with metal elements so as to enable detection by X-ray fluorescence using appropriate detection equipment (i.e., having a chemically associated element detectable by X-ray fluorescence; see column 6, lines 12-20; column 7, lines 21-59; and claims 1 and 20, for example). The antibody-coated microspheres doped with metal elements therefore read on the instantly claimed "binder having a chemically associated and nonradioactive element detectable by X-ray fluorescence". Detection of the X-ray fluorescence of the metal element labels in the microspheres indicates that binding between the receptors and the solid phased antibody(ies) has occurred (i.e., detecting an X-ray fluorescence signal generated by the detectable element in the bound microspheres). See also claim 20.

Wang further teaches of separating the solid phase substrate from the specimen and from unbound microspheres by washing (column 2, lines 60-63; and claims 4 and 20 in particular). Since the solid phase substrate contains bound receptor, unbound binder would be removed.

The teachings of Wang differ from the claimed invention in that the prior art methods involve first arraying the receptors on the extended solid phase, followed by contacting with the plurality of antibody-microsphere binders. By contrast, the instant claims require that the bound receptor (after exposure to binder) be arrayed onto the substrate.

However, the courts have ruled that changes in the sequence of adding ingredients or in the order of performing process steps is considered only routine expedient, and Applicant has not demonstrated criticality with regard to the order in which the receptors are contacted with binder and with the substrate. See MPEP 2144.04.

Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the claimed invention by first contacting the receptors of Wang with binder (antibody-coated

microspheres), followed by arraying of bound receptor onto the solid phase support. Absent evidence of criticality, the selection of any order of performing process steps is *prima facie* obvious. Consequently, one of ordinary skill in the art would have found it obvious to select any order of contacting receptor, binder, and substrate out of the course of routine optimization.

With respect to claims 2-5 and 12-15, Wang teaches detection of proteins (e.g. viral glycoproteins), which read on the instant claims as proteins are carbon-containing polymers of amino acids (see Wang at claims 20 and 40 and column 8, lines 4-36). Similarly, the antibodies taught by Wang read on claims 6-8 and 16-18, since antibodies are also proteins.

Response to Arguments

15. Applicant's arguments filed 10/28/2009 have been fully considered but are not persuasive of error.

16. With respect to the rejections of claims 1-8 and 11-18 under 35 U.S.C. 112, first paragraph, as containing new matter, Applicant's arguments (Reply, pages 6-8) have been fully considered but are not persuasive of error.

Applicant apparently acknowledges that explicit support is lacking for receptors that are "**binder-free**". However, Applicant disputes the examiner's interpretation of this term as being unduly broad and not consistent with the instant specification. In particular, Applicant argues that beads supporting receptors may not be considered "binders", but that this term would only refer to organic molecules, inorganic molecules, salts, metal ions and the like that are capable of fitting precisely into the binding site of a receptor. See Reply, pages 7-8.

This is not found persuasive while Applicant's remarks dispute the examiner's interpretation of the term "binder-free," the remarks are not accompanied by an indication of where Applicant believes support may be found for this claim limitation in the specification. The primary issue to be resolved is whether this terminology is adequately supported.

Even if one were to accept Applicant's proposed definition of "binder", support is not apparent for the claimed methods involving receptors that are "binder-free". In particular, if "binders" refer to organic molecules, inorganic molecules, salts, metal ions and the like that are capable of fitting precisely into the binding site of a receptor, this would mean that the claimed receptors must be "free of" (i.e., do not contain or include) any metal ions, salts, cofactors, etc.

For example, instant claims 5 and 15 that the receptor may be an ester, an amine, an amino acid, a polypeptide, etc. However, these same chemicals are disclosed as examples of "binders" (claims 1 and 11, part (a)). It is unclear how a receptor that is itself an ester may be considered to be "free" of a binder, since an ester is itself indicated to be a binder.

Moreover, using Applicant's proposed definition of "binder-free" would rule out receptors which are bound to metal ions, salts, cofactors, etc. No basis for this exclusion is apparent in the instant specification. Rather, many receptors are known to normally exist in association with such species. For example, Lerner et al. (discussed above) teaches that metalloproteins are proteins having a metal ion complexed with the protein molecule at the protein's metal binding site, which contributes to the protein's function by stabilizing its structure, facilitating electron transfer, and the like (column 1, lines 23-29). Applicant's proposed definition of "binder-free" would exclude such metalloproteins bearing endogenous metal ions as part of their structure; and no basis for this exclusion is apparent.

Turning to Applicants' arguments that the Examiner has attributed an unduly broad meaning for the term "binder" that is not consistent with the instant specification, Applicant argues that the Background of the Invention specifically defines this term. As disclosed therein:

> An effective binding between the protein, one example of a group of materials herein referred to as "receptors", and the material that binds to the receptor, referred to herein as "binder", generally requires that many weak bonds form simultaneously between the protein receptor and the binder. Binders include organic molecules, inorganic molecules, salts, metal ions, and the like. The bonds between the protein and the binder form at the "binding site" of the protein. The binding site is usually a cavity in the protein that is formed by a specific arrangement of amino acids that often belong to widely separated regions of the polypeptide chain and represent only a minor fraction of the total number of amino acids present in the chain. Binders must fit precisely into the binding site for effective binding to occur.

The specification therefore indicates that a binder is a "material that binds to the receptor". While this passage also discusses how binders must precisely fit into "the binding site" of a protein, it is noted that Applicant is claiming a genus of receptors that include not only proteins, but also esters, nucleic acids, amino acids, etc. (see claims 5 and 15). Such other receptors would clearly not contain "a cavity **in the protein that is formed by a specific arrangement of amino acids**" (emphasis added). For example, it is unclear how a nucleic acid molecule or an isolated amino acid could contain a ""a cavity **in the protein that is formed by a specific arrangement of amino acids**".

As such, the discussion of how binders must precisely fit into the binding site of a protein is construed by the examiner as pertaining only to embodiments involving binders that are binding to *protein* receptors.

The examiner therefore disagrees with Applicant that the term "binder" is defined instantly to require a precise fit into the binding cavity of a receptor, since the claims encompass receptors that would not contain such binding cavities.

Applicant further argues that beads "supporting" a receptor would not be considered "binders" since they do not bind the receptor. Applicant points to dictionary definitions for "support" and "bind". See Reply, pages 7-8.

This is not found persuasive because while the term "supporting" does not necessarily connote binding, it is apparent in the instant case that the bead-supported receptors were in fact "bound" to the beads. If this were not the case, the receptors would have been removed from the beads during the wash steps. This did not occur. Moreover, the specification explicitly discloses that the oligopeptide receptors were "bound" to the polystyrene bead substrates (page 13, lines 12-14).

For all of these reasons, it is maintained that adequate support is lacking for the limitation that the receptors used in the claimed method must be "binder-free".

17. With respect to the rejections of claims 1-8 and 10-18 under 35 U.S.C. 102(b) as being anticipated by Goldin et al., Applicant argues that Goldin does not disclose each and every claim limitation because Goldin uses a tagged surrogate, namely CHO cells with attached radio-labeled 2,4-dinitrophenol haptens. Applicant urges that in contrast, the present invention is concerned with evaluating the binding properties of receptors and chemicals using untagged chemical or receptor and not with a tagged surrogate. Applicant argues that the attachment of a fluorescent

tag to a chemical or receptor could result in a conformational change affecting the binding reaction. See Reply, pages 8-10, see especially the paragraph bridging pages 9-10.

Applicant does not explicitly indicate what claim limitations are believed to distinguish over the teachings of Goldin. As best understood, Applicant relies upon the claim language "at least one binder having [a] chemically associated and nonradioactive element". However, while Applicant points to the teaching of radio-labeled 2,4-dinitrophenol haptens by Goldin, the haptens of Goldin correspond to Applicant's claimed receptors and not to the binder (see detailed analysis in the rejection above). The claims do not require that the receptor be non-radioactive and as such, fail to distinguish over the teachings of Goldin where the prior art receptor includes a radioactive element.

18. With respect to the rejections of claims 1-5, 9-15, and 19-20 under 35 U.S.C. 102(e) as being anticipated by Sano et al. (US 6,391,590 B1), Applicant argues that claims 9-10 and 19-20 have been canceled and that claims 1 and 11 have been amended (Reply, page 10).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. For reasons detailed above, it is maintained that the teachings of Sano et al. anticipate instant claims 1-5 and 11-15.

19. With respect to the rejections of claims 1-8 and 11-18 under 35 U.S.C. 103(a) as being unpatentable over Wang (US 4,663,277), Applicant's arguments (Reply, pages 10-17) were

previously advanced in apparently verbatim form in the Reply filed 3/2/2009 (see pages 9-16) and are not persuasive for reasons of record (see the previous Office action, mailed on 4/28/2009, at pages 12-15).

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Foster whose telephone number is (571) 272-8786. The examiner can normally be reached on M-F 6:30-3:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya, can be reached at (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christine Foster/
Examiner, Art Unit 1641

/Mark L. Shibuya/
Supervisory Patent Examiner, Art Unit 1641